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CLAIMS

1. A device for increasing the surface smoothness of a turned surface, said device comprising a control system comprising a control unit (7) and an actuator (9, 11) connectible to the control unit and connectible with a tool holder (5), characterised in that said actuator is adapted to impart a vibrating motion in the lateral direction to the tool holder, wherein the tool holder is made to move in a vibrating manner alternatingly in and against the direction of feed when the device is mounted in a turning lathe.

2. A device as claimed in claim 1, characterised in that said actuator (9, 11) comprises an active element (9, 11) which is embeddable in the body of the tool holder (5).

3. A device as claimed in claim 1 or 2, characterised in that the control system comprises a vibration sensor (13, 15) connectible to the control unit (7) and connectible with the tool holder (5), that said vibration sensor is adapted to detect vibrations of the tool holder in the lateral direction, and that the control unit is adapted to control the vibrating motion by controlling the actuator according to sensor signals from the vibration sensor.

4. A turning tool holder, characterised in that it comprises an actuator (9, 11) which is adapted to impart a vibrating motion in the lateral direction to the turning tool holder (5), wherein the turning tool holder is made to move in a vibrating manner alternatingly in and against the direction of feed when the device is mounted in a turning lathe.

5. A turning tool holder as claimed in claim 4, characterised in that said actuator (9, 11) comprises an active element (9, 11) which is embedded in the body of the turning tool holder (5).

6. A turning tool holder as claimed in claim 4 or 5, c h a r a c t e r i s e d in that it comprises at least one pair of active elements, the active elements included in the pair being oppositely arranged on each side of the centre axis of the turning tool holder (5).

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7. A turning tool holder as claimed in ~~claim 4, 5~~ or 6, c h a r a c t e r i s e d ~~in that~~ it comprises a vibration sensor ~~(13, 15)~~ which is embedded in the body ~~of the~~ turning tool holder (5).

8. A turning lathe comprising a tool holder (5) and an actuator (9, 11) connected with the tool holder, c h a r a c t e r i s e d in that the actuator is adapted to impart a vibrating motion in the lateral direction to the tool holder, in order to make the tool holder move in a vibrating manner alternatingly in and against the direction of feed.

9. A turning lathe as claimed in claim 8, c h a r a c t e r i s e d in that it comprises a control system, the control system comprising a control unit (7) and a vibration sensor (13, 15) connected to the control unit and connected with the tool holder, that said actuator is connected to the control unit, that said vibration sensor is adapted to detect the vibrations of the tool in the lateral direction, and that the control unit is adapted to control the vibrating motion by controlling the actuator according to sensor signals from the vibration sensor.

10. A turning lathe as claimed in claim 8 or 9, c h a r a c t e r i s e d in that said actuator (9, 11) comprises an active element (9, 11) which is embedded in the body of the tool holder (5).

11. A turning lathe as claimed in claim 10, c h a r a c t e r i s e d in that said active element (9, 11) is a piezoceramic element (9, 11).

12. A method for increasing the surface smoothness of a turned surface, comprising the step of controlling the vibrations of a tool holder during turning,

characterised by the step of imparting a vibrating motion in the lateral direction to the tool holder, in order to make the tool holder move in a vibrating manner alternatingly in and against the direction of feed.

13. A method as claimed in claim 12, characterised by the step of imparting to the tool holder said vibrating motion by means of an actuator comprising an active element embedded in the body of the tool holder.

14. A method as claimed in claim 13, characterised by the step of controlling in a fed-back manner said vibrating motion by detecting the lateral vibration of the tool holder and controlling said actuator according to said lateral vibration.

15. A method as claimed in any one of claims 12-14, characterised by the step of adjusting said vibrating motion to the feeding speed.